

Wrench ~~extension bar with adapter~~ Handle

## **BACKGROUND OF THE INVENTION:**

### **Field of the invention:**

The present invention relates to an extension bar ~~provided with~~ having at one end a generally L-shaped form of a handle, and which at the opposite end of the extension bar is mounted an adapter being configured therefor receiving a straight wrench, and which is capable of rotating to allow the wrench to loosen or tighten nuts or bolts head in locations where are difficult to reach with a wrench.

### **Description of the related art:**

A search of prior art records has unveiled the following patents:

1. FR 2,808,716 issued in 2001 to Chaffner;
2. CA 1,275,184 issued in 1990 to Moetteli;
3. CA 1,121,191 issued in 1982 to Becker;
4. CA 2,152,661 issued in 1999 to Leonhardt;
5. CA 275,066 issued in 1937 to Waters;
6. WO 8,502,574 issued in 1985 to Moetteli;
7. US 6,138,533 issued in 2000 to Turtle;
8. US 6,112,625 issued in 2000 to Turtle;

9. US 6,033,081 issued in 2000 to Huang;
10. US 5,148,724 issued in 1992 to Rexford; and
11. US 4,350,064 issued in 1982 to Markle.

[As can be seen the patents mentioned above are probably the most relevant.]

It is, accordingly, a general object of this invention is therefore to provide an extension bar having at one end a generally L-shaped form of a handle with an adapter being configured therefor receiving a straight wrench, and which is capable of rotating to allow the wrench to loosen or tighten nuts or bolts head in locations where are difficult to reach with a wrench.

**Summary of the invention:**

In accordance with the teachings of the present invention, there is disclosed an extension bar having at ~~a first one~~ end a generally L-shaped form of a handle, and which at the opposite end of the extension bar a headblock is formed therefor receiving a wrench head ~~and preventing the wrench from moving therethrough when needed~~, and a head portion with notches is formed therefor receiving one of both intended openings formed ~~therethrough~~ thereupon top surface of an adapter being also configured

therefor receiving a straight wrench, and which is capable of rotating to allow the wrench to loosen or tighten nuts or bolts head in locations where are difficult to reach with a wrench.

~~A second end of the extension bar is formed so that the user is able to handle the extension bar.~~

**Brief description of the several views of the drawing(s):**

Figure 1 is a perspective view of an extension bar on which is mounted an adapter for receiving a straight wrench -as shown in phantom lines-.

Figure 2 is a bottom view of the figure 1.

Figure 3 is a rear view of the adapter corresponding to figure 1.

Figure 4 is a bottom view of the figure 3.

Figure 5a is a top perspective view of the adapter with a straight wrench.

Figure 5b is a bottom view of the figure 5a.

Figure 6 is an exploded view of the extension bar with adapter.

Figure 7 is a perspective view of the adapter capable of receiving a ratchet handle -as shown in phantom lines-.

Figure 8 is a side ~~elevation~~ view of the extension bar with adapter

~~and straight wrench not blocked on the bar in motion.~~

Figure 9 is an other fastening means for adapting a wrench to the same extension bar.

Figure 10 is a bottom perspective view of the figure 9.

Figure 11 is an exploded view of the figure 9.

**Detailed description of the invention:**

Referring now to figs. 1 to 5b and 6, there is illustrated an extension bar (1) having at ~~a first one end~~ a generally L-shaped form of a handle, and at the opposite end of the extension bar a headblock (9) is formed therefor receiving a wrench head ~~and preventing the wrench from moving~~ ~~therethrough when needed~~, and a head portion (10) with notches is formed nearby the headblock (9) thereon the extension bar (1) for receiving one of both indented openings formed ~~therethrough~~ thereupon flat portion of an adapter (2) ~~being configured~~ having two curved end portions therefor receiving a the straight wrench [-] as shown in phantom lines [-] that is tightened with a concave facing of a slidable member (3) therefor blocking the wrench in position.

The adapter (2) includes an opening formed between each curved end portion therefor receiving a backward end of the slidable member (3) having

hole, an opening formed at the opposite end therefor receiving a leg portion of a bolt (5) to be engaged therein hole of the backward end of the slidable member (3) therefor adjusting the wrench according its weight, a locking pin (4) passing therethrough hole formed thereupon top surface of the slidable member (3) for preventing the rotation of the slidable member (3) and therethrough a slot (11) formed underneath the adapter (2) to be blocked therein a groove formed with leg portion of the bolt (5), two apertures which are formed at one end of the adapter (2) therefor receiving each compression spring (7) which are pressed against each ball bearing (8) being mounted therein each indented opening formed thereupon flat portion of the adapter (2) therefor blocking the adapter (2) thereon the head portion (10), and which the compression springs (7) are blocked in place thereby a cap piece (6).

~~A second end of the extension bar (1) is formed so that the user is able to handle the extension bar (1).~~

~~The adapter (2) is capable of rotating to allow the wrench to loosen or tighten nuts or bolts head in locations where are difficult to reach with the wrench.~~

~~Thereafter, the wrench is tightened with concave facing of a~~

~~slidable member (3) which locks the wrench in position, and backward end of slidable member (3) is engaged through opening therefor receiving an extension leg of a bolt (5) therefor adjusting the wrench according its weight, and which the extension leg with notches receives a locking pin (4) therethrough hole formed thereon top surface of slidable member (3), and which the locking pin (4) extending through a slot (11) prevents the rotation of slidable member (3).~~

~~Each compression spring (7) mounted into adapter is held in place thereby a cap piece (6) and pressed against each ball bearing (8) being engaged into each hole formed through adapter (2) backward end, and which block the adapter onto head portion (10).~~

~~Furthermore, the ball bearing (8) enables also the adapter's rotation when the wrench head is removed from headblock (9) for using as ratchet handle (see fig. 8).~~

~~As shown in fig. 7, the adapter (2) may be detachable from extension bar (1) and attached to a ratchet wrench handle [-] as shown in phantom lines [-.]~~

As illustrated in figure 7, it is shown the adapter (2) that is manually removable from the extension bar (1) to be attached to a ratchet wrench

handle - as shown in phantom lines -.

As illustrated in figure 8, it is shown the extension bar (1) with adapter (2) in motion.

As shown in figs. 9 to 11, there is illustrated an other fastening means ~~for adapting to adapt~~ a wrench to the extension bar (1) of the present invention, which comprises two members portions (12) having each an inverted C-shaped opening formed thereon each top surface for engaging head portion (10) with notches and headblock (9) which are formed onto the extension bar (1).

A wrench -as shown in phantom lines- is installed into each S-shaped opening extending along each side of each member portion (12), and which the first member portion (12) is inverted compared to the second member portion (12) for engaging and blocking the wrench.

It is to be understood that the present invention is not limited to the sole embodiment described above but encompasses any and all embodiments within the scope of the following claims.

**Drawing reference numerals:**

- 1: Extension bar
- 2: Adapter

- 3: Slidable member**
- 4: Locking pin**
- 5: Bolt**
- 6: Cap piece**
- 7: Compression spring**
- 8: Ball bearing**
- 9: Headblock**
- 10: Head portion**
- 11: Slot**
- 12: Member portion**

member is engaged through opening therefor receiving an extension leg of a bolt therefor adjusting the wrench according its weight, and which the extension leg with notches receives a locking pin therethrough hole formed thereon top surface of slidable member, and which the locking pin extending through a slot prevents the rotation of slidable member.]

[3: Each compression spring mounted into said adapter is held in place thereby a cap piece and pressed against each ball bearing being engaged into each hole formed through said adapter backward end, and which block the adapter onto said head portion.]

[4: The ball bearing of claim 3 enables also the adapter's rotation when the wrench head is removed from said headblock for using as ratchet handle.]

[5: The adapter of claim 1 may be detachable from said extension bar and attached to a ratchet wrench handle.]

[6: An other fastening means for adapting a wrench to the extension bar of claim 1, which comprising:

two members portions having each an inverted C-shaped opening formed thereon each top surface for engaging head portion with notches and headblock formed onto said extension bar; and